# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-12** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-12/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 03-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 8.7 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 14.1 | | |
| Strength | Aggregate Impact Value | 18.1 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.59 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.95 | Maximum 2% | IS:2386 Part III |

**Note:**

The results pertain to the samples received and tested.
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**R KARTHIK RECHAN**
**Authorized Signatory**
**Quallity Manager**

Assistant Executive Engineer
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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-13** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-13/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 03-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.0 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 11.0 | | |
| Strength | Aggregate Impact Value | 21.6 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.54 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.12 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-15** | **Date: 06-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-15/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 03-04-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 10.5 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 9.0 | | |
| Strength | Aggregate Impact Value | 22.6 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.63 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.91 | Maximum 2% | IS:2386 Part III |

**Note:**

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-14** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-14/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 03-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 15.7 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 12.6 | | |
| Strength | Aggregate Impact Value | 21.3 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.53 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.99 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-15** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-15/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 04-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 9.3 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 14.2 | | |
| Strength | Aggregate Impact Value | 23.9 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.51 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.44 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-16** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-16/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 04-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.0 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 13.8 | | |
| Strength | Aggregate Impact Value | 21.2 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.57 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.82 | Maximum 2% | IS:2386 Part III |

**Note:**

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# TESTS RESULTS ON STABILITY OF MIX

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-15** **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Pacakage No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Hot Mix Plant, Bangalore |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-15/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 04-05-18 |

**The results of the tests conducted on the Bituminous Concrete mix sample are as follow**

| Sl.No | Particulars of observations | TEST 1 | TEST 2 | Secified limits as per MORTH specification table 500-11 |
|---|---|---|---|---|
| 1 | Marshal Stability at 60°C, KN | 12.96 | 11.24 | 10KN(min) |
| 2 | Marshal flow at 60°C, mm | 3.72 | 4.15 | 2-4 |
| 3 | Percent air Voids | 4.59 | 3.85 | 3-5 |
| 4 | Percent Voids in mineral Aggregate(VMA %) | 13.64 | 13.16 | 13-15 |
| 5 | Percent Voids filled with Bitumen(VFB %) | 73.62 | 67.97 | 65-75 |
| 6 | Density, g/cc | 2.22 | 2.24 | – |

**Note:-**

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**Quality Manager**


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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-13** **Date: 05-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-13/01 |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) |
| **Date of test** | : | 03-05-18 |
| **Oven Dry Weight** | : | 5000 Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 200 | 200 | 4.00 | 96.00 | 90-100 |
| 9.5 | 700 | 900 | 18.00 | 82.00 | 70-88 |
| 4.75 | 1350 | 2250 | 45.00 | 55.00 | 53-71 |
| 2.36 | 200 | 2450 | 49.00 | 51.00 | 42-58 |
| 1.18 | 400 | 2850 | 57.00 | 43.00 | 34-48 |
| 0.6 | 400 | 3250 | 65.00 | 35.00 | 26-38 |
| 0.3 | 600 | 3850 | 77.00 | 23.00 | 18-28 |
| 0.15 | 400 | 4250 | 85 | 15.00 | 12-20 |
| 0.075 | 500 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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# TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-14** **Date: 05-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-14/01 |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) |
| **Date of test** | : | 03-05-18 |
| **Oven Dry Weight** | : | 5000 Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 200 | 200 | 4.00 | 96.00 | 90-100 |
| 9.5 | 1250 | 1450 | 29.00 | 71.00 | 70-88 |
| 4.75 | 450 | 1900 | 38.00 | 62.00 | 53-71 |
| 2.36 | 350 | 2250 | 45.00 | 55.00 | 42-58 |
| 1.18 | 750 | 3000 | 60.00 | 40.00 | 34-48 |
| 0.6 | 550 | 3550 | 71.00 | 29.00 | 26-38 |
| 0.3 | 300 | 3850 | 77.00 | 23.00 | 18-28 |
| 0.15 | 200 | 4050 | 81 | 19.00 | 12-20 |
| 0.075 | 700 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-15** **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-15/01 |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) |
| **Date of test** | : | 04-05-18 |
| **Oven Dry Weight** | : | 5000 Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 200 | 200 | 4.00 | 96.00 | 90-100 |
| 9.5 | 750 | 950 | 19.00 | 81.00 | 70-88 |
| 4.75 | 650 | 1600 | 32.00 | 68.00 | 53-71 |
| 2.36 | 950 | 2550 | 51.00 | 49.00 | 42-58 |
| 1.18 | 200 | 2750 | 55.00 | 45.00 | 34-48 |
| 0.6 | 450 | 3200 | 64.00 | 36.00 | 26-38 |
| 0.3 | 750 | 3950 | 79.00 | 21.00 | 18-28 |
| 0.15 | 250 | 4200 | 84 | 16.00 | 12-20 |
| 0.075 | 400 | 4600 | 92 | 8.00 | 4-10 |
| PAN | 400 | 5000 | 100 | 0.00 | 0 |

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**Quality Manager**

## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-16** **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-16/01 |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) |
| **Date of test** | : | 04-05-18 |
| **Oven Dry Weight** | : | 5000 Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 450 | 450 | 9.00 | 91.00 | 90-100 |
| 9.5 | 800 | 1250 | 25.00 | 75.00 | 70-88 |
| 4.75 | 850 | 2100 | 42.00 | 58.00 | 53-71 |
| 2.36 | 500 | 2600 | 52.00 | 48.00 | 42-58 |
| 1.18 | 600 | 3200 | 64.00 | 36.00 | 34-48 |
| 0.6 | 450 | 3650 | 73.00 | 27.00 | 26-38 |
| 0.3 | 100 | 3750 | 75.00 | 25.00 | 18-28 |
| 0.15 | 550 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 200 | 4500 | 90 | 10.00 | 4-10 |
| PAN | 500 | 5000 | 100 | 0.00 | 0 |

**Note:**
The results pertain to the samples received and tested.
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Vidyaranyapura Sub Division
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# TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-15** **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Pacakage No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-15/01 |
| **Type of Mix** | : | BC(Bitumenous Concrete) |
| **Date of test** | : | 04-05-18 |

| | | |
|---|---|---|
| **Type of Binder** | : | 60/70 |
| **% of Binder Used** | : | 5.0% |
| **Weight of Aggregate** | : | 200.0 gm |
| **Weight of Binder** | : | 10.0 gm |
| **Temperature of water bath** | : | 40°C |

| No of test | Retained Stripping Percentage | Stripping Percentage | Average Retained Stripping Percentage | Secified limits as per MORTH specification table 500-8 |
|---|---|---|---|---|
| 1 | 97.9 | 2.1 | 97.6 | Minimum Retained Coating 95% |
| 2 | 98.6 | 1.4 | | |
| 3 | 96.3 | 3.7 | | |

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-17** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-17/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 05-05-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 400 | 400 | 8.00 | 92.00 | 90-100 |
| 9.5 | 800 | 1200 | 24.00 | 76.00 | 70-88 |
| 4.75 | 700 | 1900 | 38.00 | 62.00 | 53-71 |
| 2.36 | 450 | 2350 | 47.00 | 53.00 | 42-58 |
| 1.18 | 300 | 2650 | 53.00 | 47.00 | 34-48 |
| 0.6 | 750 | 3400 | 68.00 | 32.00 | 26-38 |
| 0.3 | 350 | 3750 | 75.00 | 25.00 | 18-28 |
| 0.15 | 550 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 450 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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# TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-18** | **Date: 07-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-18/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 05-05-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 400 | 400 | 8.00 | 92.00 | 90-100 |
| 9.5 | 900 | 1300 | 26.00 | 74.00 | 70-88 |
| 4.75 | 550 | 1850 | 37.00 | 63.00 | 53-71 |
| 2.36 | 500 | 2350 | 47.00 | 53.00 | 42-58 |
| 1.18 | 800 | 3150 | 63.00 | 37.00 | 34-48 |
| 0.6 | 150 | 3300 | 66.00 | 34.00 | 26-38 |
| 0.3 | 300 | 3600 | 72.00 | 28.00 | 18-28 |
| 0.15 | 600 | 4200 | 84 | 16.00 | 12-20 |
| 0.075 | 550 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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**Quality Manager**

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-17** | **Date: 08-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-17/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 05-05-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.1 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 9.0 | | |
| Strength | Aggregate Impact Value | 19.8 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.55 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.08 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-16** | **Date: 06-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-16/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 03-04-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 10.7 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 12.2 | | |
| Strength | Aggregate Impact Value | 23.7 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.54 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.16 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-17** **Date: 06-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-17/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 03-04-18 |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 10.7 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 11.2 | | |
| Strength | Aggregate Impact Value | 19.7 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.56 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.61 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-18** | **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-18/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 04-04-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 12.6 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 10.0 | | |
| Strength | Aggregate Impact Value | 18.8 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.59 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.73 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-19** **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-19/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 04-04-18 |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.9 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 12.8 | | |
| Strength | Aggregate Impact Value | 21.6 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.58 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 0.02 | Maximum 2% | IS:2386 Part III |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-20** **Date: 09-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-20/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 05-04-18 |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 14.9 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 12.4 | | |
| Strength | Aggregate Impact Value | 21.7 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.54 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.23 | Maximum 2% | IS:2386 Part III |

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-12** | **Date: 05-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-05-18 | |
| **Sample ID No** | : | 2018-05-02-12/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 03-05-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 150 | 150 | 3.00 | 97.00 | 90-100 |
| 9.5 | 750 | 900 | 18.00 | 82.00 | 70-88 |
| 4.75 | 1350 | 2250 | 45.00 | 55.00 | 53-71 |
| 2.36 | 350 | 2600 | 52.00 | 48.00 | 42-58 |
| 1.18 | 200 | 2800 | 56.00 | 44.00 | 34-48 |
| 0.6 | 500 | 3300 | 66.00 | 34.00 | 26-38 |
| 0.3 | 800 | 4100 | 82.00 | 18.00 | 18-28 |
| 0.15 | 250 | 4350 | 87 | 13.00 | 12-20 |
| 0.075 | 250 | 4600 | 92 | 8.00 | 4-10 |
| PAN | 400 | 5000 | 100 | 0.00 | 0 |

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-15** | **Date: 05-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-15/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 03-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 400 | 400 | 8.00 | 92.00 | 90-100 |
| 9.5 | 200 | 600 | 12.00 | 88.00 | 70-88 |
| 4.75 | 1350 | 1950 | 39.00 | 61.00 | 53-71 |
| 2.36 | 700 | 2650 | 53.00 | 47.00 | 42-58 |
| 1.18 | 300 | 2950 | 59.00 | 41.00 | 34-48 |
| 0.6 | 150 | 3100 | 62.00 | 38.00 | 26-38 |
| 0.3 | 850 | 3950 | 79.00 | 21.00 | 18-28 |
| 0.15 | 450 | 4400 | 88 | 12.00 | 12-20 |
| 0.075 | 350 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bengalore - 97

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**Quality Manager**


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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-16** | **Date: 05-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-16/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 03-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 400 | 400 | 8.00 | 92.00 | 90-100 |
| 9.5 | 750 | 1150 | 23.00 | 77.00 | 70-88 |
| 4.75 | 1000 | 2150 | 43.00 | 57.00 | 53-71 |
| 2.36 | 100 | 2250 | 45.00 | 55.00 | 42-58 |
| 1.18 | 600 | 2850 | 57.00 | 43.00 | 34-48 |
| 0.6 | 300 | 3150 | 63.00 | 37.00 | 26-38 |
| 0.3 | 700 | 3850 | 77.00 | 23.00 | 18-28 |
| 0.15 | 450 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 250 | 4550 | 91 | 9.00 | 4-10 |
| PAN | 450 | 5000 | 100 | 0.00 | 0 |

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 92

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-17** | **Date: 05-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-17/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 03-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 100 | 100 | 2.00 | 98.00 | 90-100 |
| 9.5 | 550 | 650 | 13.00 | 87.00 | 70-88 |
| 4.75 | 1300 | 1950 | 39.00 | 61.00 | 53-71 |
| 2.36 | 450 | 2400 | 48.00 | 52.00 | 42-58 |
| 1.18 | 650 | 3050 | 61.00 | 39.00 | 34-48 |
| 0.6 | 50 | 3100 | 62.00 | 38.00 | 26-38 |
| 0.3 | 600 | 3700 | 74.00 | 26.00 | 18-28 |
| 0.15 | 400 | 4100 | 82 | 18.00 | 12-20 |
| 0.075 | 650 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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**Quality Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-18** | **Date: 06-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-18/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 04-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 100 | 100 | 2.00 | 98.00 | 90-100 |
| 9.5 | 1200 | 1300 | 26.00 | 74.00 | 70-88 |
| 4.75 | 200 | 1500 | 30.00 | 70.00 | 53-71 |
| 2.36 | 1150 | 2650 | 53.00 | 47.00 | 42-58 |
| 1.18 | 100 | 2750 | 55.00 | 45.00 | 34-48 |
| 0.6 | 600 | 3350 | 67.00 | 33.00 | 26-38 |
| 0.3 | 500 | 3850 | 77.00 | 23.00 | 18-28 |
| 0.15 | 450 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 450 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-19** **Date: 06-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-19/01 |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) |
| **Date of test** | : | 04-04-18 |
| **Oven Dry Weight** | : | 5000 Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 450 | 450 | 9.00 | 91.00 | 90-100 |
| 9.5 | 550 | 1000 | 20.00 | 80.00 | 70-88 |
| 4.75 | 1050 | 2050 | 41.00 | 59.00 | 53-71 |
| 2.36 | 50 | 2100 | 42.00 | 58.00 | 42-58 |
| 1.18 | 650 | 2750 | 55.00 | 45.00 | 34-48 |
| 0.6 | 750 | 3500 | 70.00 | 30.00 | 26-38 |
| 0.3 | 350 | 3850 | 77.00 | 23.00 | 18-28 |
| 0.15 | 450 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 200 | 4500 | 90 | 10.00 | 4-10 |
| PAN | 500 | 5000 | 100 | 0.00 | 0 |

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

# TESTS RESULTS ON STABILITY OF MIX

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-19** **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Pacakage No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Hot Mix Plant, Bangalore |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-19/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 04-04-18 |

**The results of the tests conducted on the Bituminous Concrete mix sample are as follow**

| Sl.No | Particulars of observations | TEST 1 | TEST 2 | Secified limits as per MORTH specification table 500-11 |
|---|---|---|---|---|
| 1 | Marshal Stability at 60°C, KN | 13.74 | 11.43 | 10KN(min) |
| 2 | Marshal flow at 60°C, mm | 3.85 | 3.28 | 2-4 |
| 3 | Percent air Voids | 4.64 | 4.57 | 3-5 |
| 4 | Percent Voids in mineral Aggregate(VMA %) | 13.13 | 15.69 | 13-15 |
| 5 | Percent Voids filled with Bitumen(VFB %) | 72.08 | 72.37 | 65-75 |
| 6 | Density, g/cc | 2.22 | 2.24 | – |

**Note:-**

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# TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-19** **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Pacakage No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-04-18 |
| **Sample ID No** | : | 2018-04-02-19/01 |
| **Type of Mix** | : | BC(Bitumenous Concrete) |
| **Date of test** | : | 04-04-18 |

| | | |
|---|---|---|
| **Type of Binder** | : | 60/70 |
| **% of Binder Used** | : | 5.0% |
| **Weight of Aggregate** | : | 200.0 gm |
| **Weight of Binder** | : | 10.0 gm |
| **Temperature of water bath** | : | 40°C |

| No of test | Retained Stripping Percentage | Stripping Percentage | Average Retained Stripping Percentage | Secified limits as per MORTH specification table 500-8 |
|---|---|---|---|---|
| 1 | 98.4 | 1.6 | 97.8 | Minimum Retained Coating 95% |
| 2 | 96.2 | 3.8 | | |
| 3 | 98.9 | 1.1 | | |

**Note:**
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Vidyaranyapura Sub Division
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**Quality Manager**


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## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-20** | **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-20/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 05-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 300 | 300 | 6.00 | 94.00 | 90-100 |
| 9.5 | 800 | 1100 | 22.00 | 78.00 | 70-88 |
| 4.75 | 350 | 1450 | 29.00 | 71.00 | 53-71 |
| 2.36 | 800 | 2250 | 45.00 | 55.00 | 42-58 |
| 1.18 | 650 | 2900 | 58.00 | 42.00 | 34-48 |
| 0.6 | 400 | 3300 | 66.00 | 34.00 | 26-38 |
| 0.3 | 700 | 4000 | 80.00 | 20.00 | 18-28 |
| 0.15 | 300 | 4300 | 86 | 14.00 | 12-20 |
| 0.075 | 300 | 4600 | 92 | 8.00 | 4-10 |
| PAN | 400 | 5000 | 100 | 0.00 | 0 |

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**Quality Manager**

## TEST RESULTS OF GRADATION FOR BC
## IS 2386 (Part 1) 1963 (RA 2007 )

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-21** | **Date: 07-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-21/01 | |
| **Type of Mix** | : | BC-Plant (Bituminous Concrete) | |
| **Date of test** | : | 05-04-18 | |
| **Oven Dry Weight** | : | 5000 | Grams |

| IS Sieve Size (mm) | Weight Retained (gm) | Comulative Weight Retained (gm) | Comulative % of Retained | Comulative % of Passing | Secified limits as per MORTH specification table 500-17(grading-2) |
|---|---|---|---|---|---|
| 19 | 0 | 0 | 0.00 | 100.00 | 100 |
| 13.2 | 400 | 400 | 8.00 | 92.00 | 90-100 |
| 9.5 | 500 | 900 | 18.00 | 82.00 | 70-88 |
| 4.75 | 1250 | 2150 | 43.00 | 57.00 | 53-71 |
| 2.36 | 300 | 2450 | 49.00 | 51.00 | 42-58 |
| 1.18 | 650 | 3100 | 62.00 | 38.00 | 34-48 |
| 0.6 | 300 | 3400 | 68.00 | 32.00 | 26-38 |
| 0.3 | 300 | 3700 | 74.00 | 26.00 | 18-28 |
| 0.15 | 400 | 4100 | 82 | 18.00 | 12-20 |
| 0.075 | 650 | 4750 | 95 | 5.00 | 4-10 |
| PAN | 250 | 5000 | 100 | 0.00 | 0 |

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | | |
|---|---|---|---|
| **Lab ID** | : | **CP-RW-2018-04-02-21** | **Date: 09-04-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore | |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore | |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) | |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 | |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 | |
| **Source of Sample** | : | Sample supplied by Agency | |
| **Sample Condition** | : | Satisfactory | |
| **Date of Receipt** | : | 02-04-18 | |
| **Sample ID No** | : | 2018-04-02-21/01 | |
| **Type of Mix** | : | BC (Bituminous Concrete) | |
| **Date of test** | : | 05-04-18 | |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 11.6 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 8.7 | | |
| Strength | Aggregate Impact Value | 20.4 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.51 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.16 | Maximum 2% | IS:2386 Part III |

**Note:**

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**R KARTHIK RECHAN**
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Assistant Executive Engineer
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BBMP, Bangalore - 97

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# PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

| | | |
|---|---|---|
| **Lab ID** | : | **CP-RW-2018-05-02-18** **Date: 08-05-18** |
| **Customer** | : | Assistant Executive Engineer, Vidyaranyapura Sub Division, Bangalore |
| **Address** | : | Vidyaranyapura Sub Division, Bangalore |
| **Project Name** | : | Package No. 04 ( Package consists of 28 works) |
| **Agency** | : | M/s. Ram and company, Sri. C R GIRISH, No. 12, Patel Pillegowda layout, Ramachandrapura, Bangalore- 560013 |
| **Customer Reference** | : | BBMP/EE/BTP/WO/129/2017-18 |
| **Source of Sample** | : | Sample supplied by Agency |
| **Sample Condition** | : | Satisfactory |
| **Date of Receipt** | : | 02-05-18 |
| **Sample ID No** | : | 2018-05-02-18/01 |
| **Type of Mix** | : | BC (Bituminous Concrete) |
| **Date of test** | : | 05-05-18 |

**Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete**

| Property | Test | Result | Specification | Method of Test |
|---|---|---|---|---|
| Partical Shape | Flakiness Index | 15.6 | Combined Flakiness & Elongation Index for BC is Maximum 35% | IS:2386 Part I |
| | Elongation Index | 13.9 | | |
| Strength | Aggregate Impact Value | 18.4 | Maximum 24% | IS:2386 Part IV |
| Specific gravity | Specific gravity | 2.53 | Maximum 2.7 | IS:2386 Part III |
| Water Absorption | Water Absorption | 1.36 | Maximum 2% | IS:2386 Part III |

**Note:**

The results pertain to the samples received and tested.
All information furnished by Customer/Representative
Any correction in the report will make this report invalid
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

**FOR CIVIL Pro.**

**R KARTHIK RECHAN**
**Authorized Signatory**
**Quallity Manager**

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL Pro Sig..... Date..... BANGALORE



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